Draft Material for DAU's CLR 250 Online Course for Capabilities-Based Assessment (CBA) Team Member Training

15 Feb 2010 Draft

Draft Material from DAU's CLR 250 Online Course for Capabilities-Based Assessment (CBA) Team Member Training

Lesson #1 – CBA Background

Capabilities-Based Assessment – Three Official Levels of Definition (#1)

- **"The CBA is the Joint Capabilities Integration and Development System analysis process. It answers several key questions for the validation authority prior to their approval: define the mission; identify capabilities required; determine the attributes/standards of the capabilities; identify gaps; assess operational risk associated with the gaps; prioritize the gaps; identify and assess potential non-materiel solutions; provide recommendations for addressing the gaps."**

Source: CJCSI 3170.01G, 1 Mar 2009, JCIDS, p. GL-3

- **Brief historical context on the formation of the CBA:**
  - ***On 20 October 2003, the Joint Requirements Oversight Council (JROC) issued a memorandum on a recently completed study of forcible entry operations. This memorandum directed that "… The Director, J-8, Joint Staff, in coordination with the Commander, US Joint Forces Command, and the Services, develop a Forcible Entry Joint Operating Concept (JOC) by 31 December 2003. Furthermore "…The Director, J-8, Joint Staff, in coordination with the Services, use the JOC-derived tasks to conduct a capabilities-based assessment by 30 September 2004." [Source: JROCM 199-03, 2003]***

Capabilities-Based Assessment – Three Official Levels of Definition (#2)

- **"The CBA is the analytic basis of the JCIDS process. It identifies capability needs and gaps and recommends non-materiel or materiel approaches to address gaps. A CBA may be based on an approved Joint Concept; a concept of operations (CONOPS) endorsed by the JROC, a combatant command, Service, or defense agency; the results of a Senior Warfighters' Forum (SWarF)*; or an identified operational need. It becomes the basis for validating capability needs and results in the potential development and deployment of new or improved capabilities." (Note: JCIDS calls for CBAs to be done in 90 to 180 days…)**

Source: JCIDS Manual, Feb 2009, Updated 31 Jul 2009, p. A-1

- ***SWarF Definition: Senior Warfighter Forum. A SWarF is a collaborative body – generally consisting of Combatant Command Deputy Commanders – that organizes, analyzes, prioritizes, builds consensus and makes decisions from the joint warfighters' perspective on complex capability, resource and standards issues.***

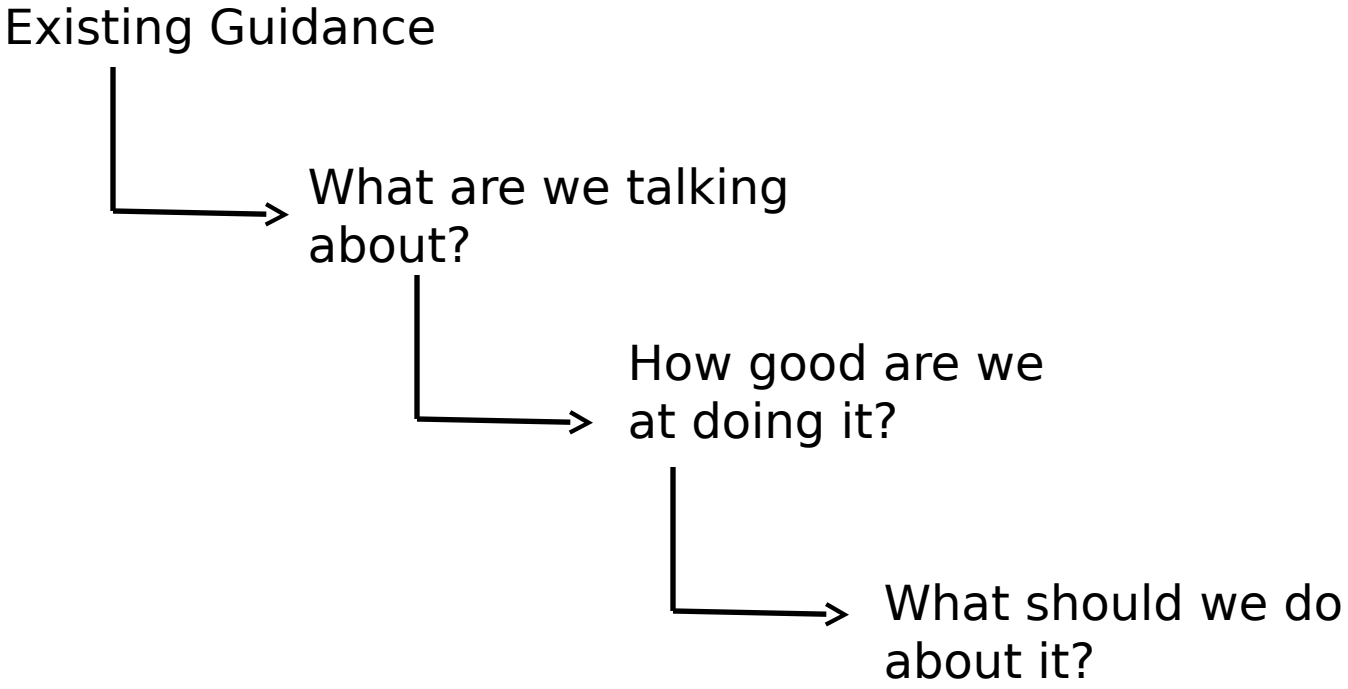
Source: CJCSI 3137.01D. P. A-12

Capabilities-Based Assessment – Three Official Levels of Definition (#3)

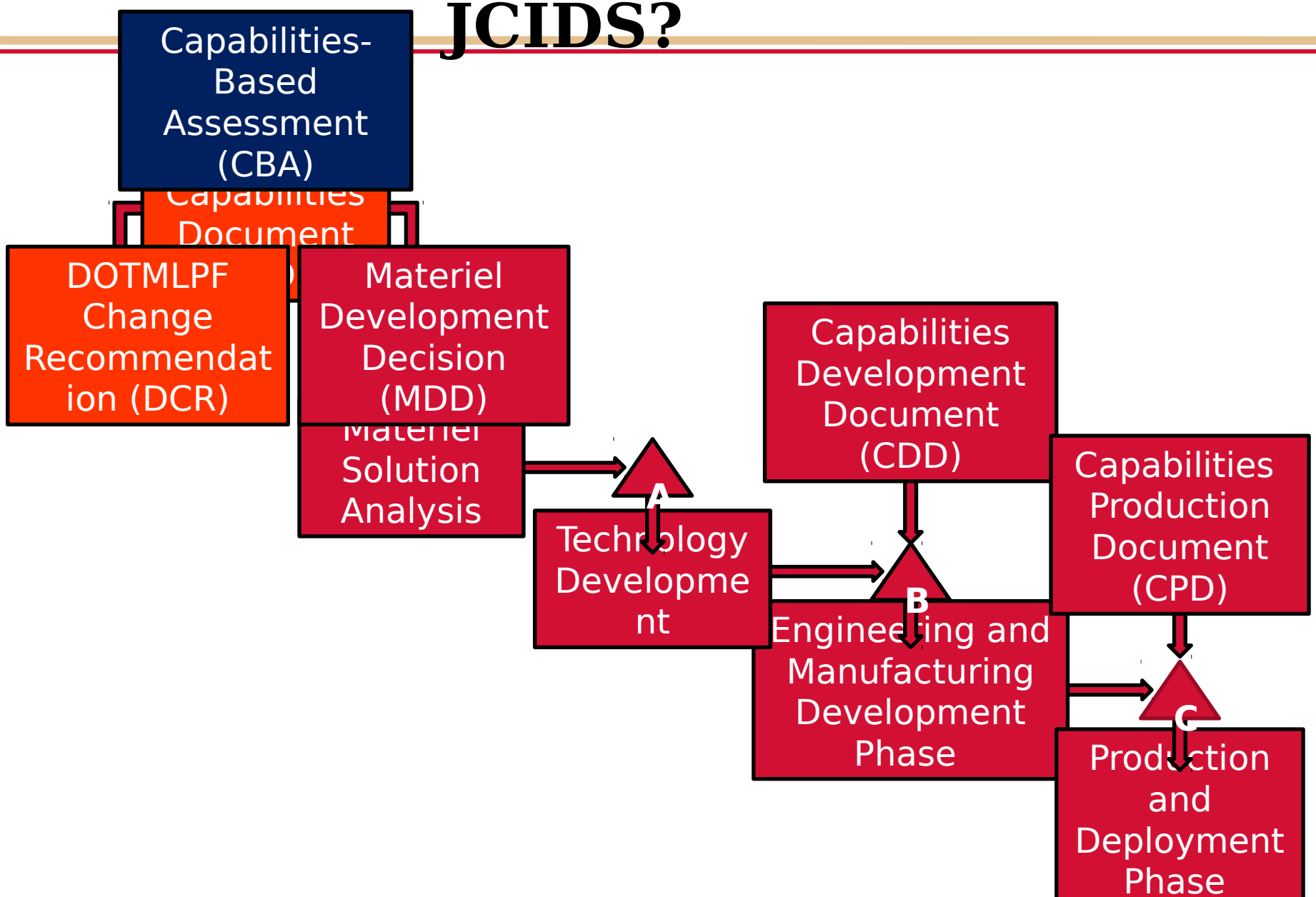
- **"The CBA identifies: the capabilities and operational performance criteria required to successfully execute missions; the shortfalls in existing weapon systems to deliver those capabilities and the associated operational risks; the possible non-materiel approaches for mitigating or eliminating the shortfall, and when appropriate recommends pursuing a materiel solution."**

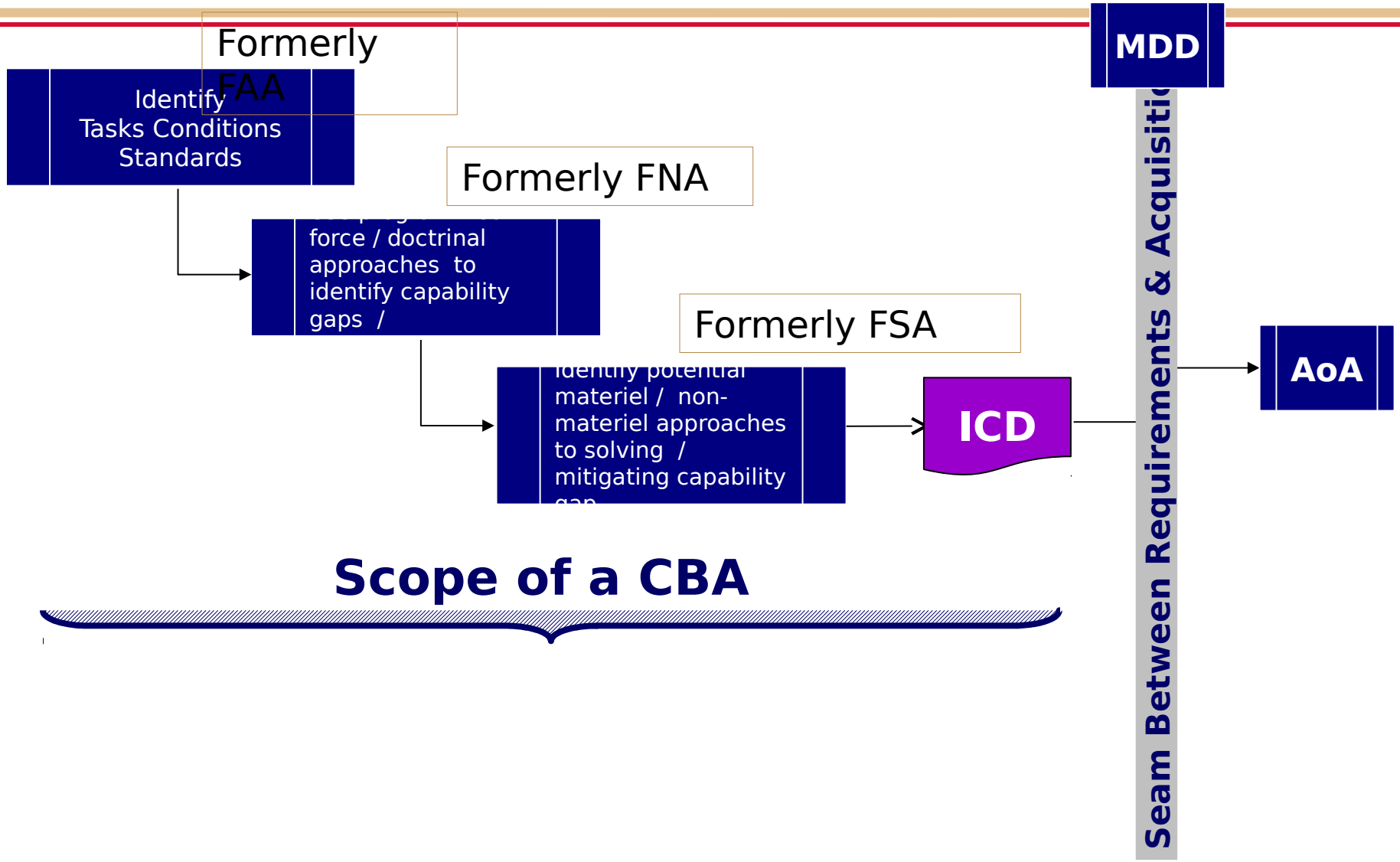
Source: J-8 CBA User's Guide, V3, Mar 2009, p. 4

Conceptually, What The CBA Really Boils Down To:



Where the CBA Fits in the JCIDS?





Scope of a CBA

Do ICDs or DCRs Always Result From CBAs?

- **No!**
  - **"Now, there are many approved ICDs that do not have something called a CBA associated with them. Some of this is due to validation of needs that predate JCIDS; in other cases, the decision to address a capability gap was either proven by actual combat, seized upon due to a technological opportunity, or simply mandated due to other existing evidence."**

Non-Materiel Approaches That CBAs Recommend (through DOTMLPF Change Recommendations - DCRs)

- Doctrine
- Organization
- Training
- Materiel
- Leadership & Education
- Personnel
- Facilities

Materiel Approaches That CBAs Recommend (through Initial Capability Documents - ICDs)

- **Development and fielding of Information Systems**
  - **(or similar technologies with high obsolescence rates) or evolution of the capabilities of existing information systems**
- **Evolution of Existing Systems**
  - **with significant capability improvement (this may include replacing an existing system with a newer, more capable system, or simple recapitalization)**
- **Breakout Systems**
  - **that differ significantly in form, function, operation, and capabilities from existing systems.**

What are the Main Types of CBAs?

- **The Six CBA Types:**
  1. **CBAs based on operational shortcomings we have already experienced;**
  2. **CBAs based on perceived future needs (including the failure of programs in place to address the future needs);**
  3. **CBAs to provide a unified look at a mission area;**
  4. **CBAs to examine an operational concept proposed by a particular community;**
  5. **CBAs to broadly examine a functional area; and**
- **However, there is a sixth, very different CBA worth mentioning separately…**

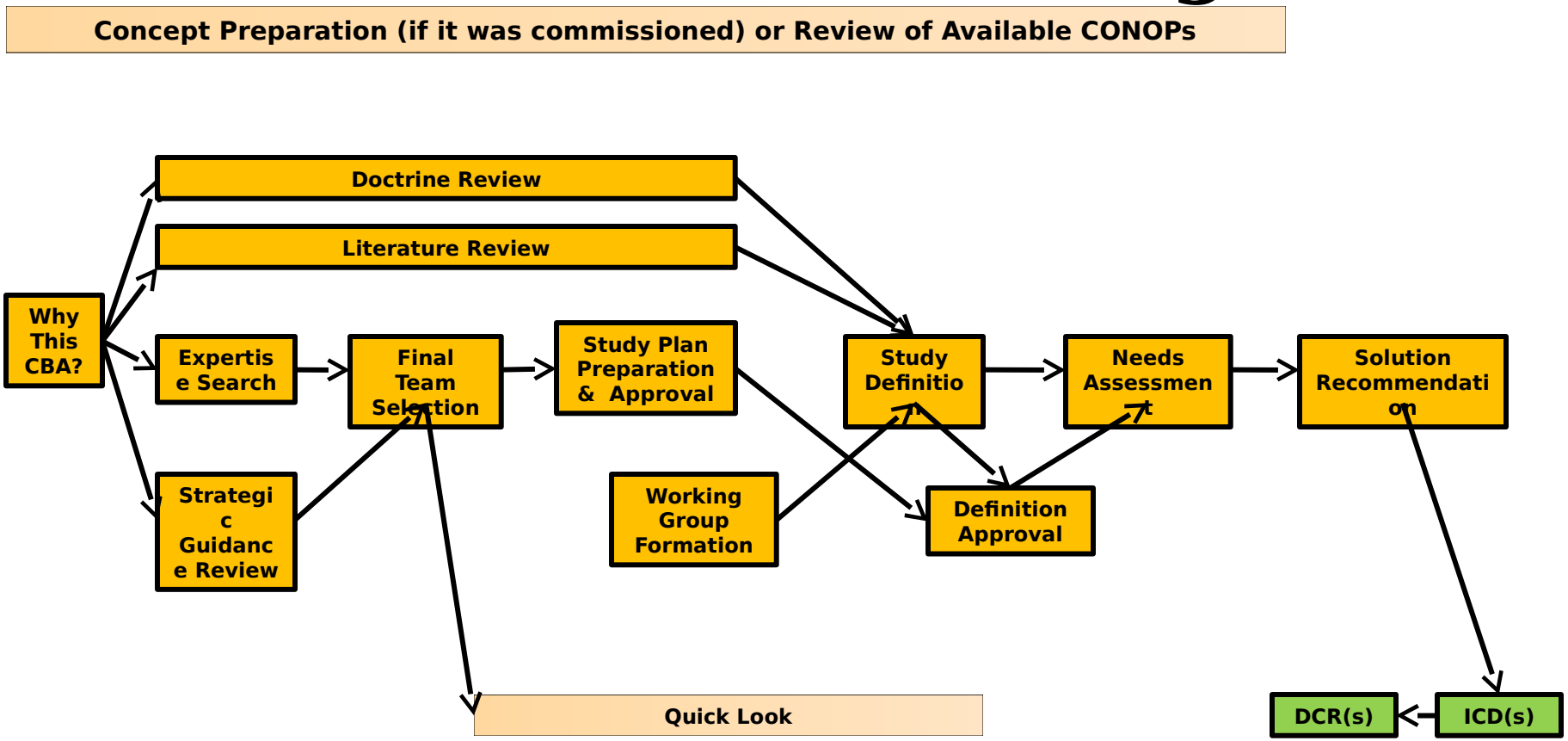
The “Quick Turn” CBA

- **Not to be confused with a “normal” CBA, the “Quick Turn” CBA uses a completely different approach:**
  - **Previous taxonomy still applies**
  - **Normally accomplished in 30 to 60 days**
  - **Requires significantly different approach – oriented towards time compression**
  - **May become the norm – JROC may require ALL future CBAs be completed in 30 to 180 days (due to faster-changing capability needs)**
- **A detailed description of the Quick Turn CBA characteristics begins on page 68 of the CBA Users Guide while the appendix includes a sample Quick Turn CBA done on biometrics.**

Why Do a "Quick Turn" CBA versus a "normal" CBA?

- To address an imminent budget or programming action
- To break a bureaucratic logjam
- To react to an unexpected budget or program event
- To address an emerging need
- To settle a disagreement
- To pull together a set of disparate examinations and studies

What's the Next Step? CBA Flow: Serial & Parallel Taskings



Reflective Question

- **Which of the following is (are) example(s) of "Breakout Approaches" to materiel solutions? Why? If not, why not?**
  - **The Digital Television**

  - **The Communications Satellite**

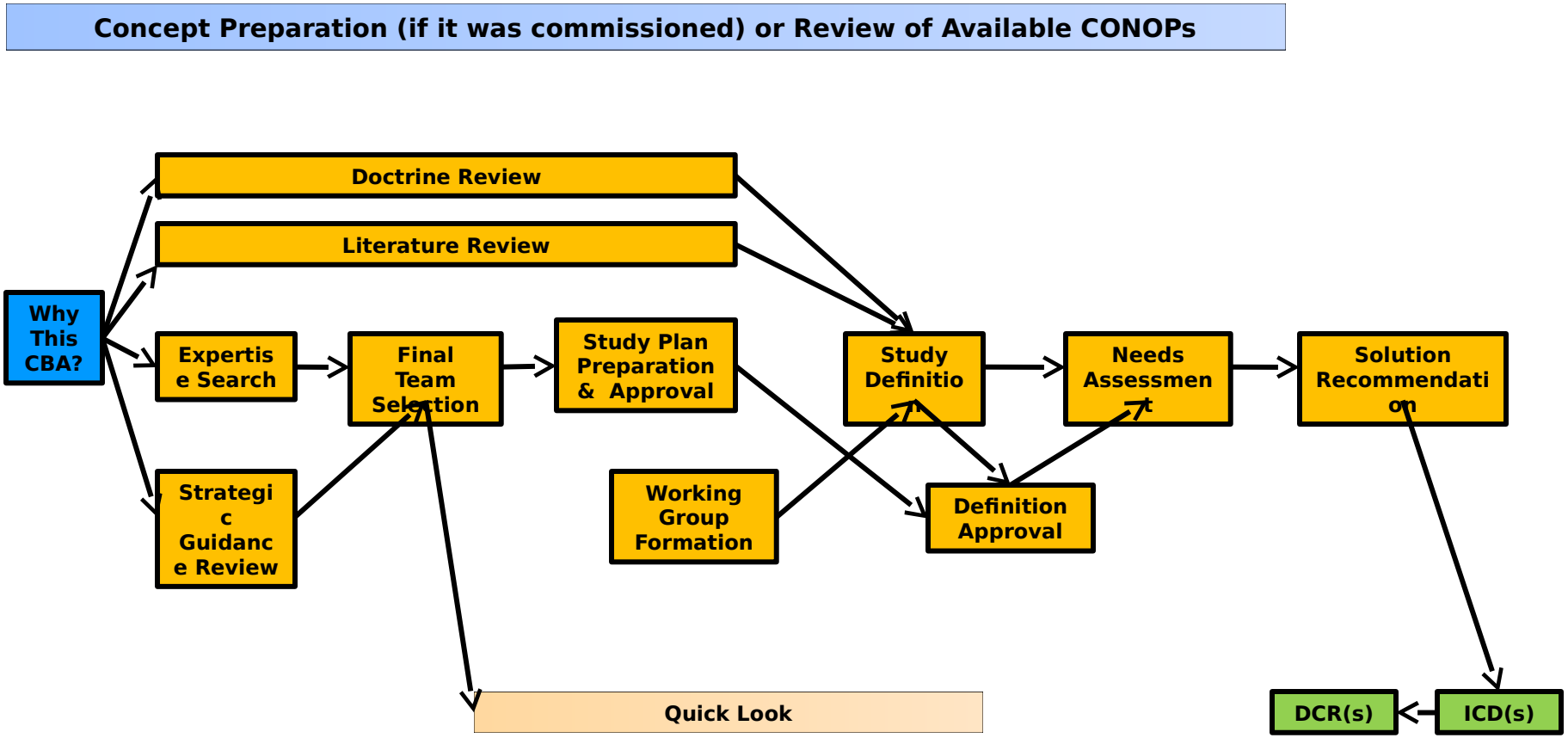
  - **The Electric Car**

  - **The Hand-Held Calculator**

Draft Material from DAU's CLR 250 Online Course for Capabilities-Based Assessment (CBA) Team Member Training

Lesson #2 – CBA Pre-Planning Research

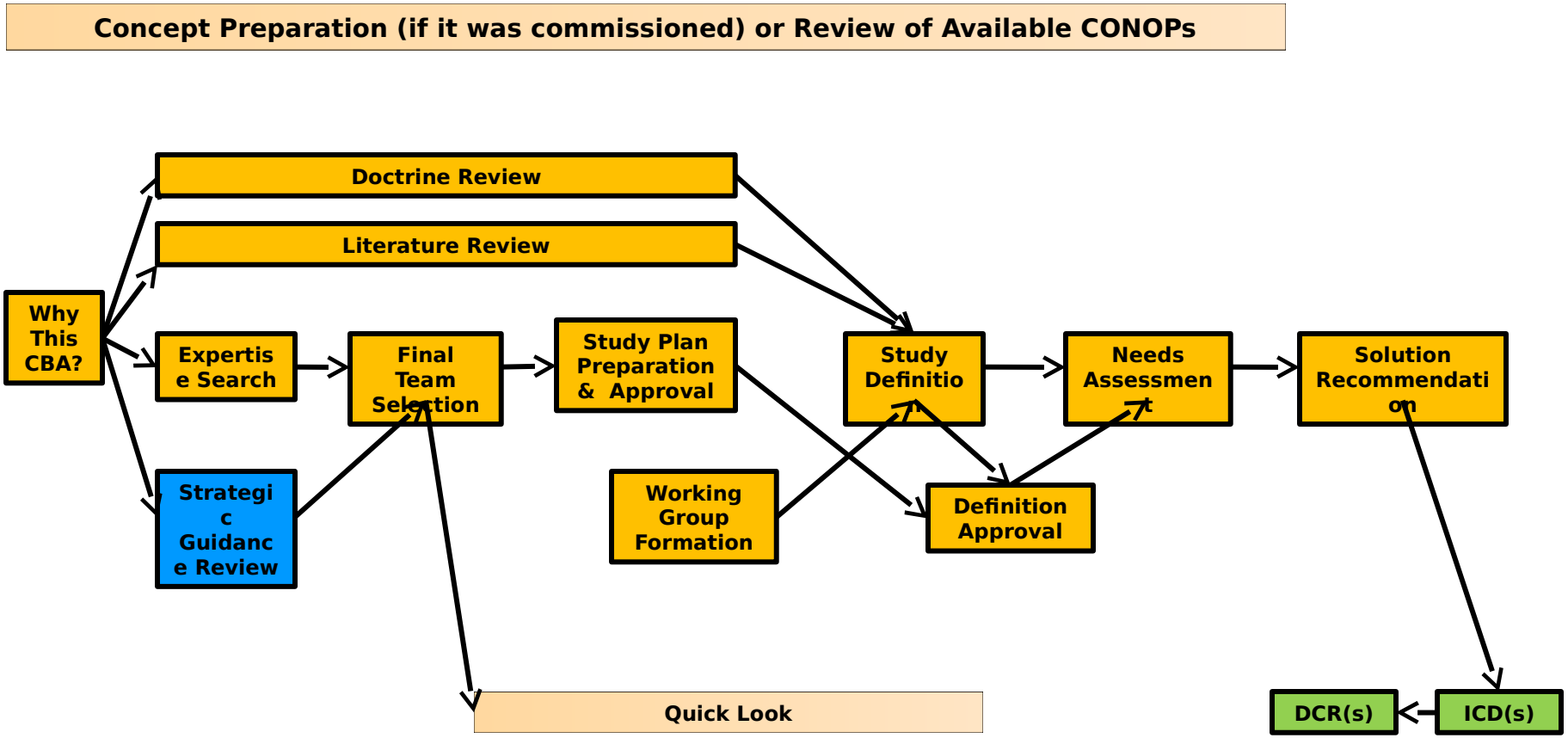
Why This Particular CBA?



Why This CBA?

- **Little to no formal description of what or why**
  - **See attached Space Radar CBA Memorandum**
- **Discover who wants the assessment**
  - **What are their expectations**
  - **Understand their motivations**
  - **Know why this particular topic prevailed**
- **Results can differ from what decision makers expected**
- **CBAs raise questions that challenge (& create resistance to)**
  - **Major programs**
  - **Major concepts**
  - **Core Service competencies**
- **Decision makers in the JROC and strategic environment may change during CBA phases**
  - **Must provide solid history to explain CBA reasons & taskings**

CBA Strategic Guidance Review



CBA Strategic Guidance

- **The strategic guidance documents mentioned in the JCIDS Manual that informs and guides the CBA Study Team include:**
  - **National Security Strategy (NSS)**
  - **National Defense Strategy (NDS)**
  - **National Military Strategy (NMS)**
  - **Quadrennial Defense Review (QDR)**
  - **Guidance on Employment of the Force (GEF)**
  - **Guidance on Development of the Force (GDF)**
  - **Joint Strategic Capabilities Plan (JSCP)**
  - **Unified Command Plan (UCP)**
  - **Joint Capability Areas (JCAs)**

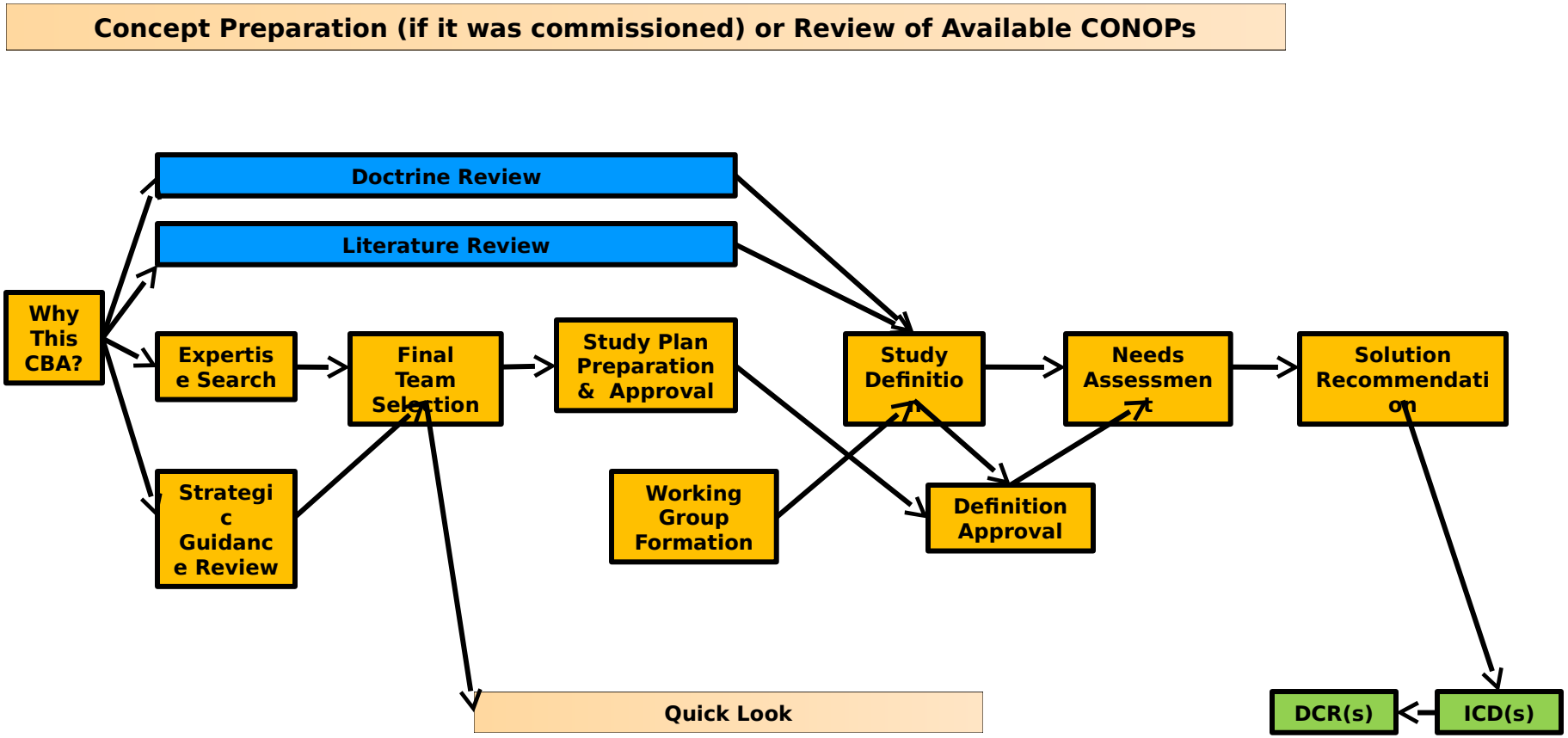
CBA Strategic Guidance (continued)

- **The family of Joint Operations Concepts (JOpsC) are informed by the Strategic Guidance. This family of documents include:**
  - **Capstone Concept for Joint Operations (CCJO)**
  - **Joint Operating Concepts (JOCs)**
  - **Joint Functional Concepts (JFCs)**
  - **Joint Integrating Concepts (JICs)**
- **Other sources of strategic guidance at your disposal (add links here…):**
  - ***"The Joint Operational Environment – The World Through 2020 and Beyond,"***
  - ***"An Evolving Joint Perspective: Joint Warfare and Crisis Resolution (JWCR) in the 21st Century,"***
  - ***"Mapping the Global Future: Report of the National Intelligence Council's 2020 Project"***

CBA Strategic Guidance (continued)

- **What value does studying and incorporating these strategic guidance documents add?**
  - **To find an organizing framework**
  - **To identify overarching priorities**
  - **To set performance standards**
  - **To secure unchallengeable guidance**
  - **To avoid pre-determined outcomes**

Doctrine and Literature Review



Doctrine & Literature Review: Sources of Relevant Analyses

- **Defense Science Board Reports**
- **Combatant Commanders' Integrated Priority Lists (IPLs)**
- **Op-Ed Articles in the Defense Literature**
  - **Defense News**
  - **Armed Forces Journal**
  - **Foreign Affairs**
  - **Professional authors communicate arguments more effectively than DoD study reports**
  - **Authors may be good candidates for CBA Working Group Team, if not CBA Core Team**
- **Available joint doctrine of your CBA topic**
  - **Interview briefing authors when documentation is incomplete**
  - **Create and insert a tab for each paragraph below in the notes section:**

Who leads the typical CBA?

- **Typical CBA:**
  - **led by an O-5, with**
  - **no previous large-scale study experience**
  - **first tour of joint, Service, or COCOM staff. Yet**
  - **is expected to perform a comprehensive analysis**
  - **of a broad mission or functional area,**
  - **provide defensible quantitative results**
  - **in an extremely contentious bureaucratic environment**

- **Obviously, the CBA leader needs to begin finding the right expertise…**

Reflective Question

- **You are a General/Flag Officer and want a capabilities gap addressed: identifying combatants in a crowd of non-combatants. If you were to task somebody with conducting a CBA on that gap, what expectations, motivations, and other information would you want your CBA leader to know beforehand? Why?**

Reflective Question

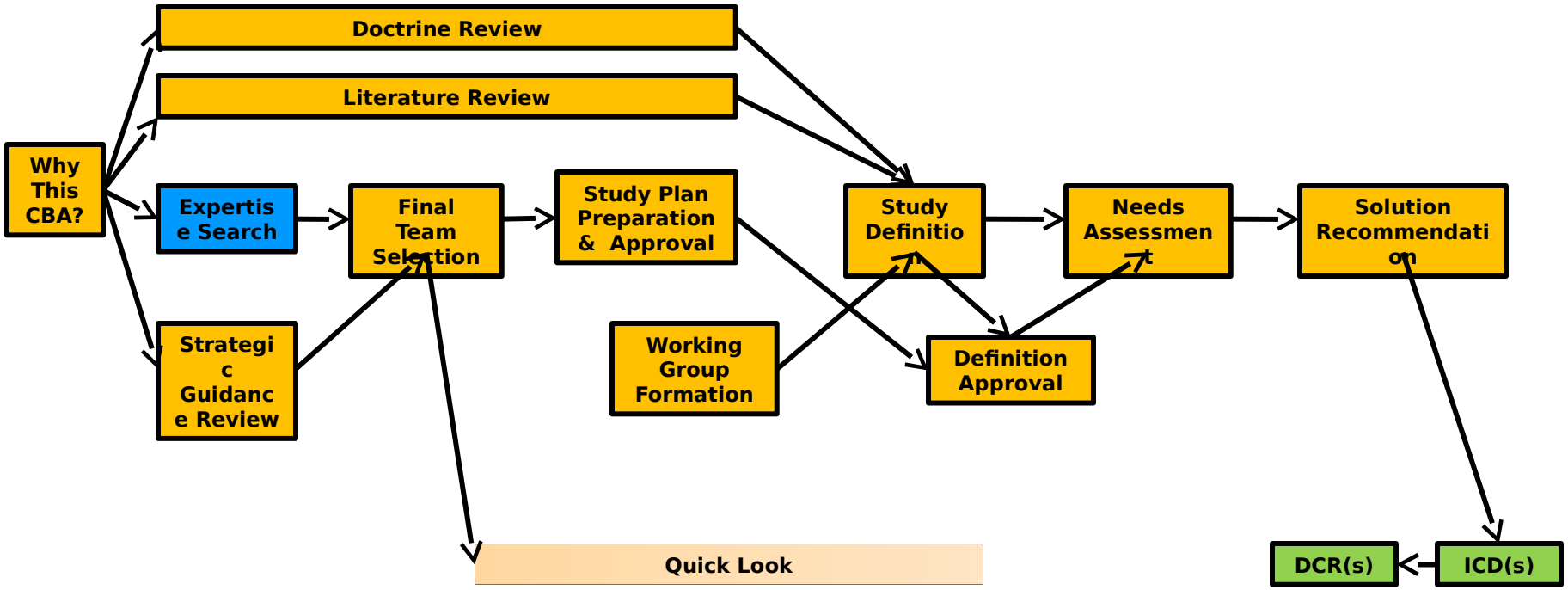
- **You've been selected to head up a CBA on non-lethal means to disperse hostile non-combatants. You've reviewed the applicable strategic guidance. What sources of information are available to you during your research? What problems might you face obtaining that information?**

Draft Material from DAU's CLR 250 Online Course for Capabilities-Based Assessment (CBA) Team Member Training

Lesson #3 – CBA Team Building and Planning

Expertise Search

Concept Preparation (if it was commissioned) or Review of Available CONOPs



Identifying Relevant Expertise to Conduct CBAs:

- **Adversary Expertise**
- **Analytical Ability**
- **Bureaucratic Agility**
- **Communications Ability**
- **Doctrinal Knowledge**

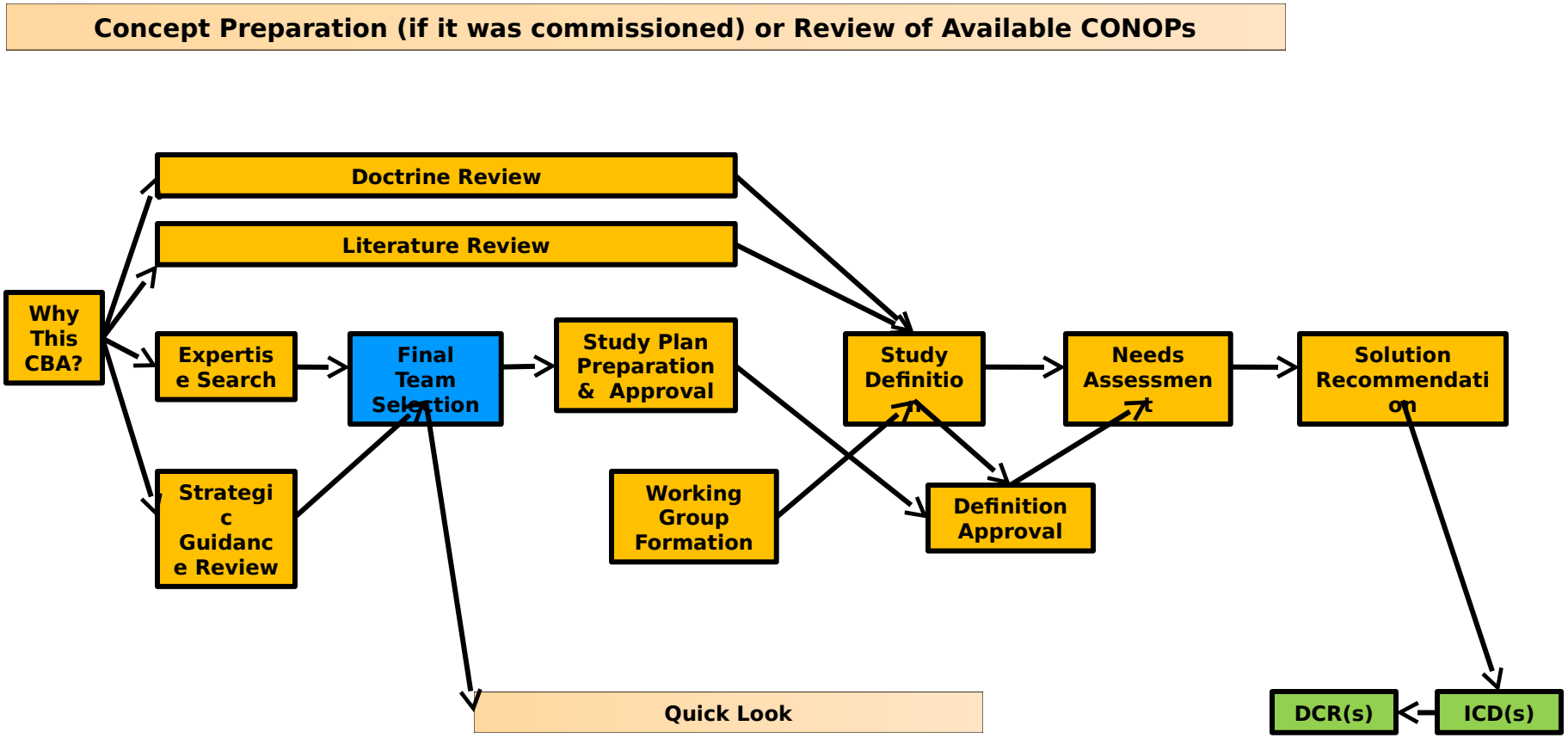
Identifying Relevant Expertise to Conduct CBAs (continued):

- Study Design
- Study Management
- Cost Estimation
- Technical knowledge
- Policy knowledge

Identifying Relevant Expertise (continued):

- **Additional Sources Valuable to CBAs:**
  - **Government Organizations**
  - **Contractors**
  - **Federally Funded Research and Development Centers (FFRDCs)**
  - **University Affiliated Research Centers (UARCs)**
  - **Informal advisors who are neither in the government nor on contract**

Final Team Selection



34

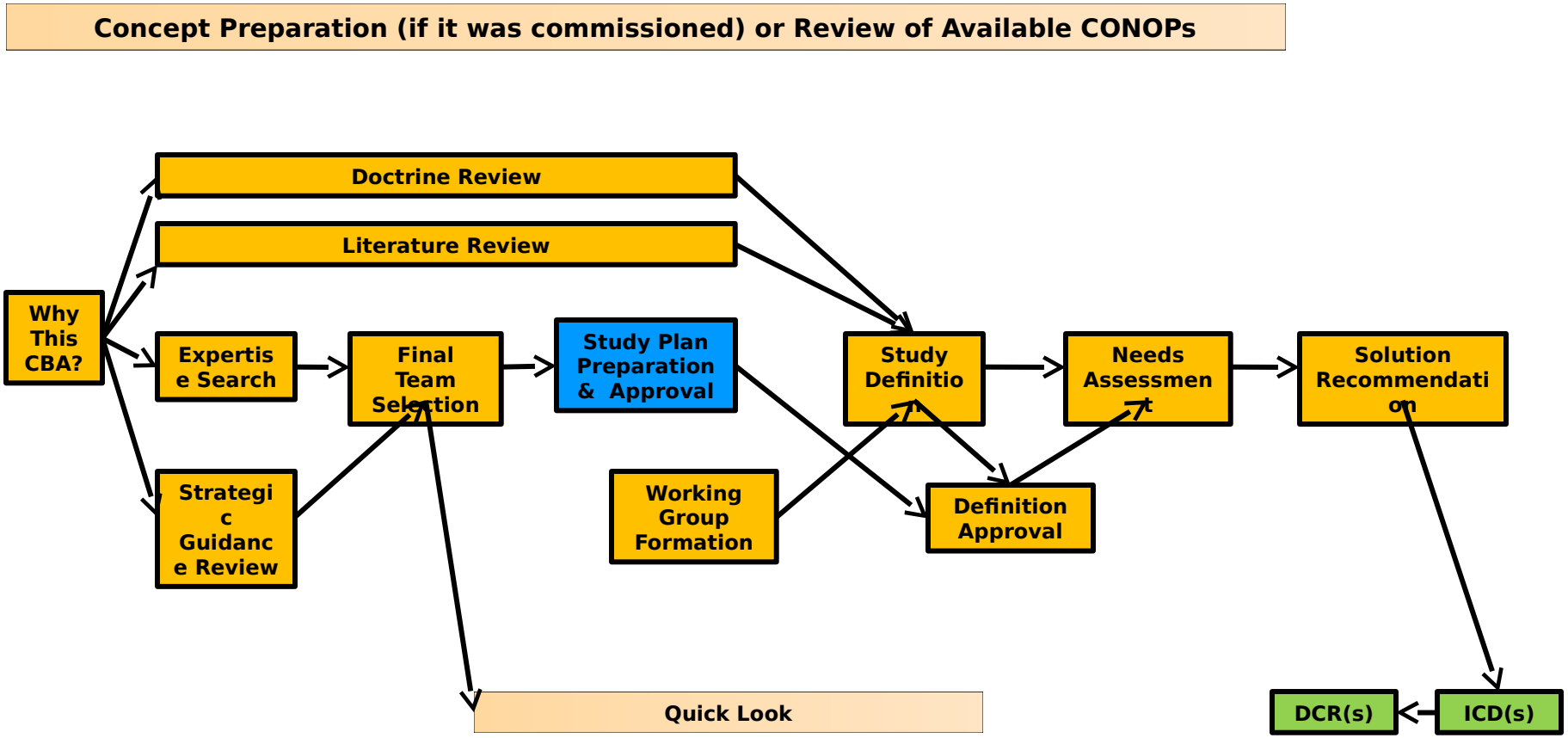
Final Team Selection

- **“Highly Recommended” Advice to the CBA Study Team Manager:**
  - **Form the “Core Team” as soon as practical.**
  - **Know the difference between “Core Team” and “Working Group Team”**

CBA Organizational Matrix

	Study Director	Director's chain of command	Organization A	Organization B	Contractor A	Contractor B
Adversary expertise			X			
Analytic Team					X	
Bureaucratic advisor		X				
Communicator	X					
Cost estimator					X	
Doctrinal experts						
Area 1				X		
Area 2					X	
Area…						X
Study designer				X		
Study organizer	X					
Policy experts			X			
Technical experts				X		X

Study Plan Preparation and Approval



Impediments Faced by Previous CBAs

- **Concept Delays**
- **False Starts**
- **Staffing Results Through JCIDS**
- **Command Redirection**
- **Access and Clearance Problems**

The CBA Study Plan Scope

- **"When the JROC directs the initiation of a CBA, the CBA study plan will be included as a step *prior to the functional area analysis.* The study plan will include specific areas the CBA will examine. The study plan *will scope the CBA*, clearly identify the focus of the assessment, identify which of the four Capability-Based Planning challenges (traditional, irregular, disruptive, catastrophic) it will address, and demonstrate that the assessment will address the tasking authority's request… This study plan also makes clear what the CBA will not address. The CBA needs to be thorough yet *not subject to mission creep*."**

The Scope of the CBA

- **Scenarios considered (conditions)**
- **Functions considered (ways)**
- **Types of solutions considered (means)**

The Scope of the CBA (continued)

- **Capabilities desired (effects)**
- **Concept of operation (tasks)**
- **Measures of effectiveness (standards)**

The Scope of the CBA (continued)

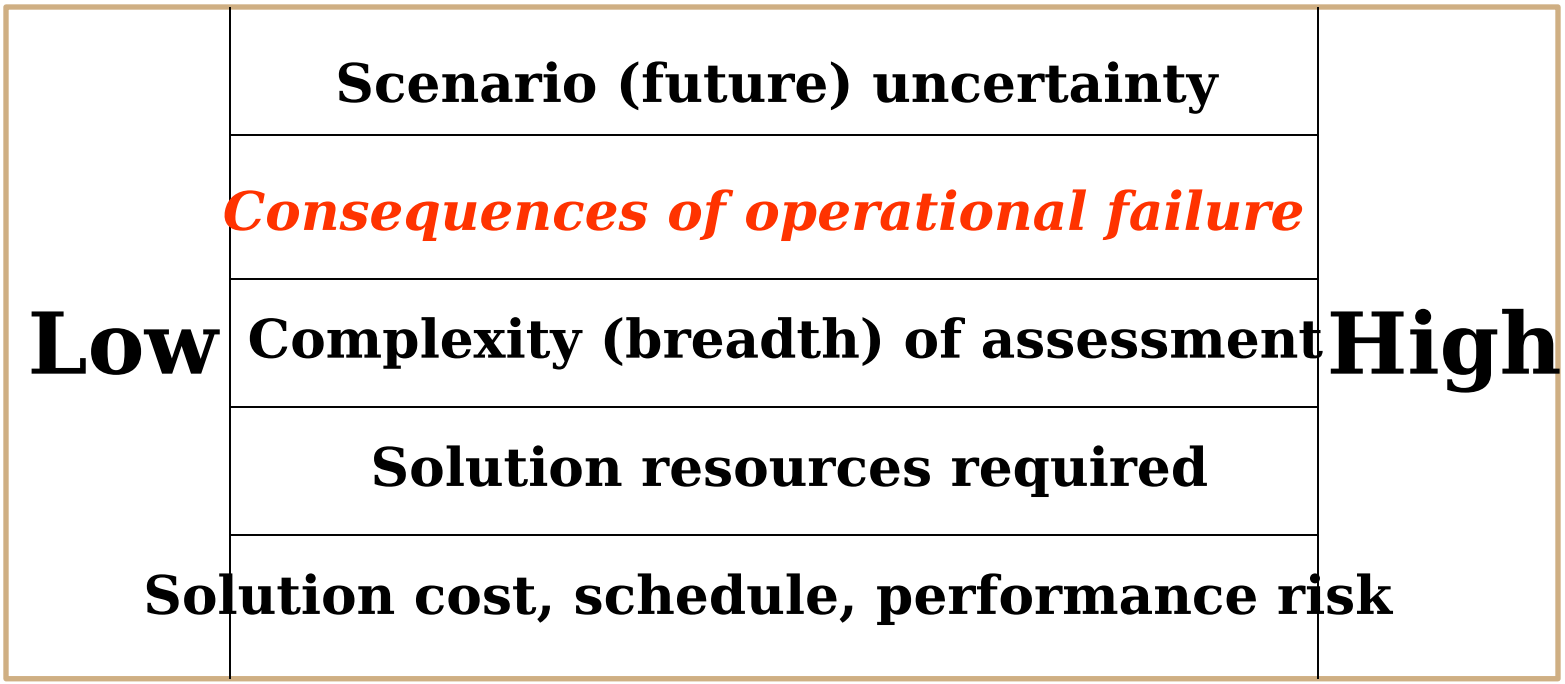
- **"The JROC preference is to *avoid high rigor* and time-consuming detail in the CBA, and *concentrate on whether to recommend action.* CBAs that are tightly focused on recapitalization or replacement actions should take no more than 90 days, while more complex CBAs dealing with large uncertainties should take no more than 180 days. "**

CBA Study Rigor

	Scenario (future) uncertainty	
	Consequences of operational failure	
Low	Complexity (breadth) of assessment	High
	Solution resources required	
	Solution cost, schedule, performance risk	

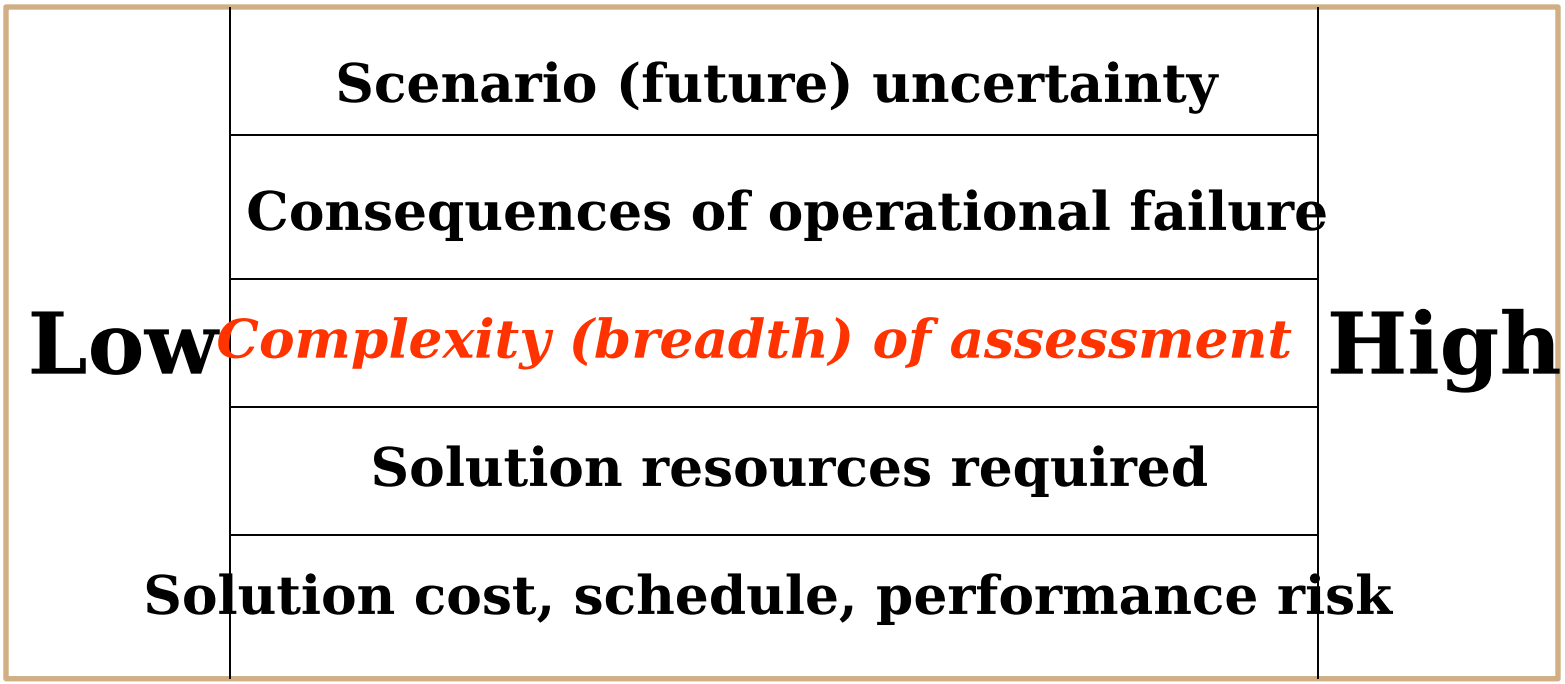
Low Rigor → High Rigo

CBA Study Rigor



Low Rigor → High Rigo

CBA Study Rigor



Low Rigor → High Rigo

CBA Study Rigor

	Scenario (future) uncertainty	
	Consequences of operational failure	
Low	Complexity (breadth) of assessment	High
	Solution resources required	
	Solution cost, schedule, performance risk	

Low Rigor → High Rigo

CBA Study Rigor

Low		High
	Scenario (future) uncertainty	
	Consequences of operational failure	
	Complexity (breadth) of assessment	
	Solution resources required	
	Solution cost, schedule, performance risk	

Low Rigor → **High Rigo**

The CBA Study Plan Format

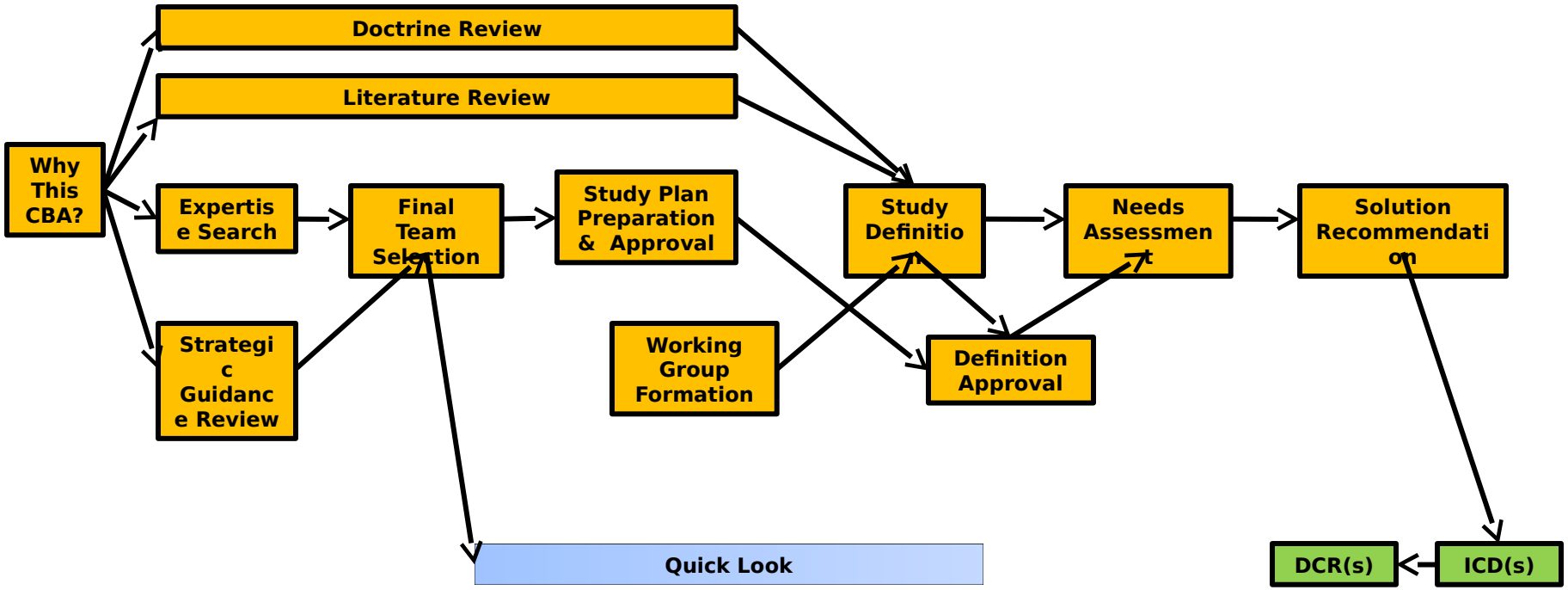
- **No specified format – however shorter is better (15 pages or less)**
- **The following is a composite of past CBA Study Plans (useful as a starting point…)**
  - **References**
  - **Purpose**
  - **Background and Guidance**
  - **Objectives**
  - **Scope**
  - **Methodology**
  - **Organization and Governance**
  - **Projected Schedule**
  - **Responsibilities**

The CBA Study Plan Format (continued)

- **Methodology Approaches**
- **Measures of Effectiveness (MOEs)**
- **Technological and Policy Opportunities**

The Quick Look Pilot Study

Concept Preparation (if it was commissioned) or Review of Available CONOPs



50

The CBA "Quick Look" Pilot Study

- **Benefits: creates analytical bounds on:**
  - **Current doctrinal CONOPS**
  - **Options open to the enemy**
  - **Investments in the capability areas**
  - **Alternate CONOPS and operating policies**

The CBA "Quick Look" Pilot Study

- **Products & Timing:**
  - **Briefing to superiors that offers initial answers to the questions that inevitably follow.**
  - **Begin Quick Look Pilot Study ASAP with your Core Team members**
    - ***'The management question, therefore, is not whether to build a pilot system and throw it away. You will do that. The only question is whether to plan in advance to build a throwaway, or to promise to deliver the throwaway to customers. Seen this way, the answer is much clearer… Hence plan to throw one away; you will, anyhow."***

      Source: Brooks, Frederick P. Jr., The Mythical Man-Month: Essays on Software Engineering, Addison-Wesley, 1995, 116]

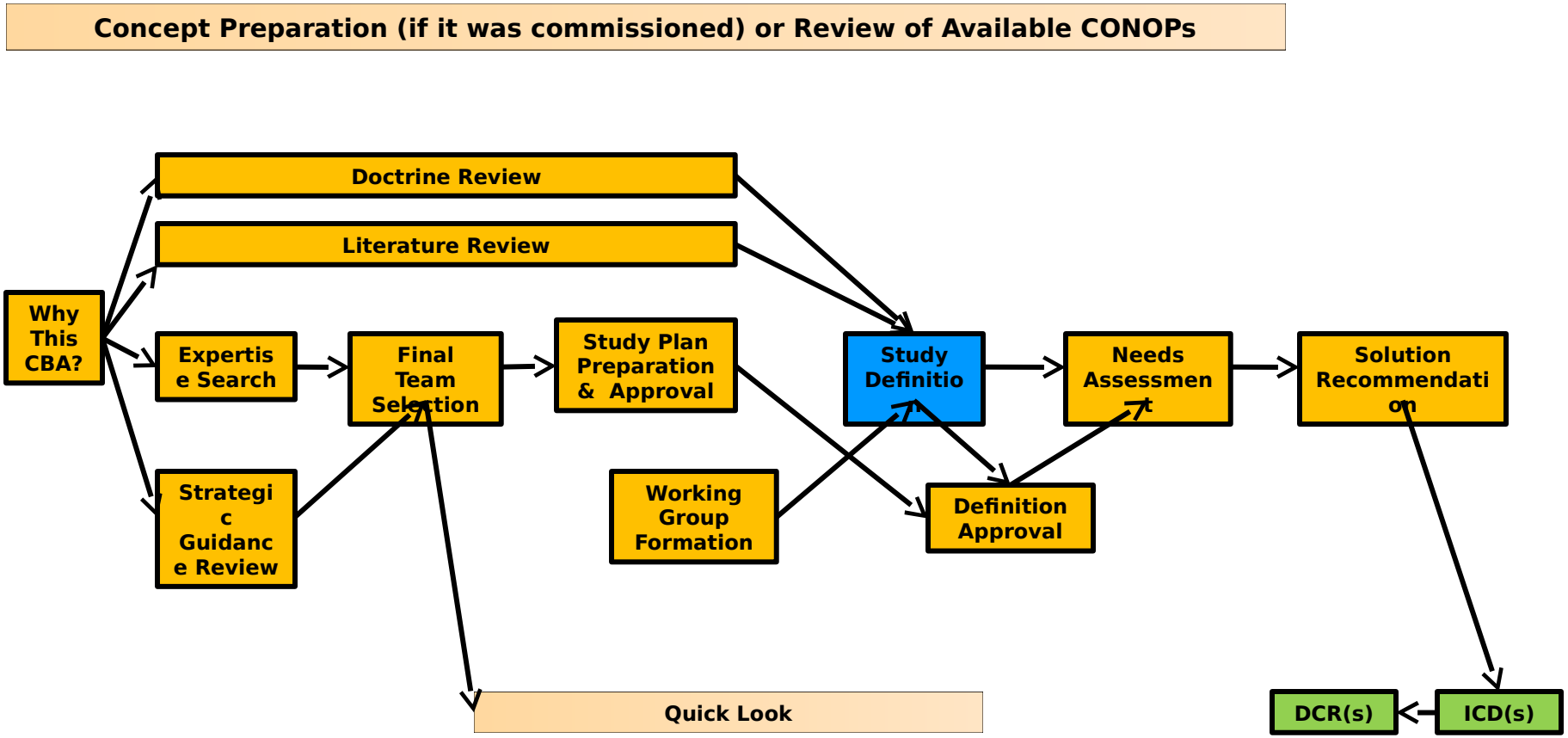
Reflective Questions

- **You've been handed a memo instructing you to conduct a CBA addressing gaps on insurgent detection in a crowded urban environment. You've already started some of your document reviews.**
- **Using the organizational matrix on slide #8 as a reminder, who immediately comes to your mind that could act as members of your Core Team? Your Working Group Team? If there are gaps in filling out your Core Team, where might you look for members that could fulfill that missing function? What specific additional expertise may be needed to effectively conduct your CBA?**

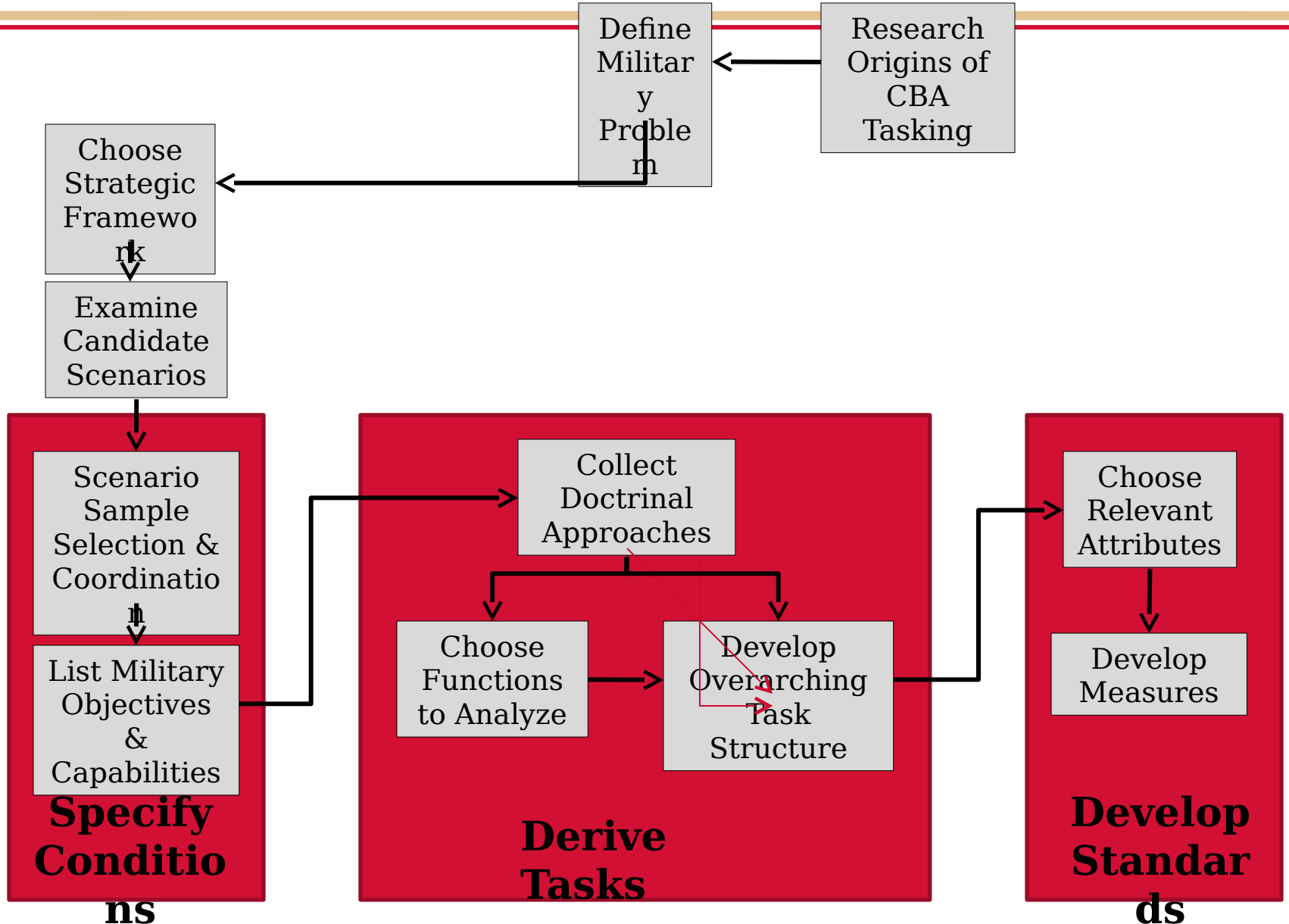
Draft Material from DAU's CLR 250 Online Course for Capabilities-Based Assessment (CBA) Team Member Training

Lesson #4 – CBA Study Phases

Study Definition Phase

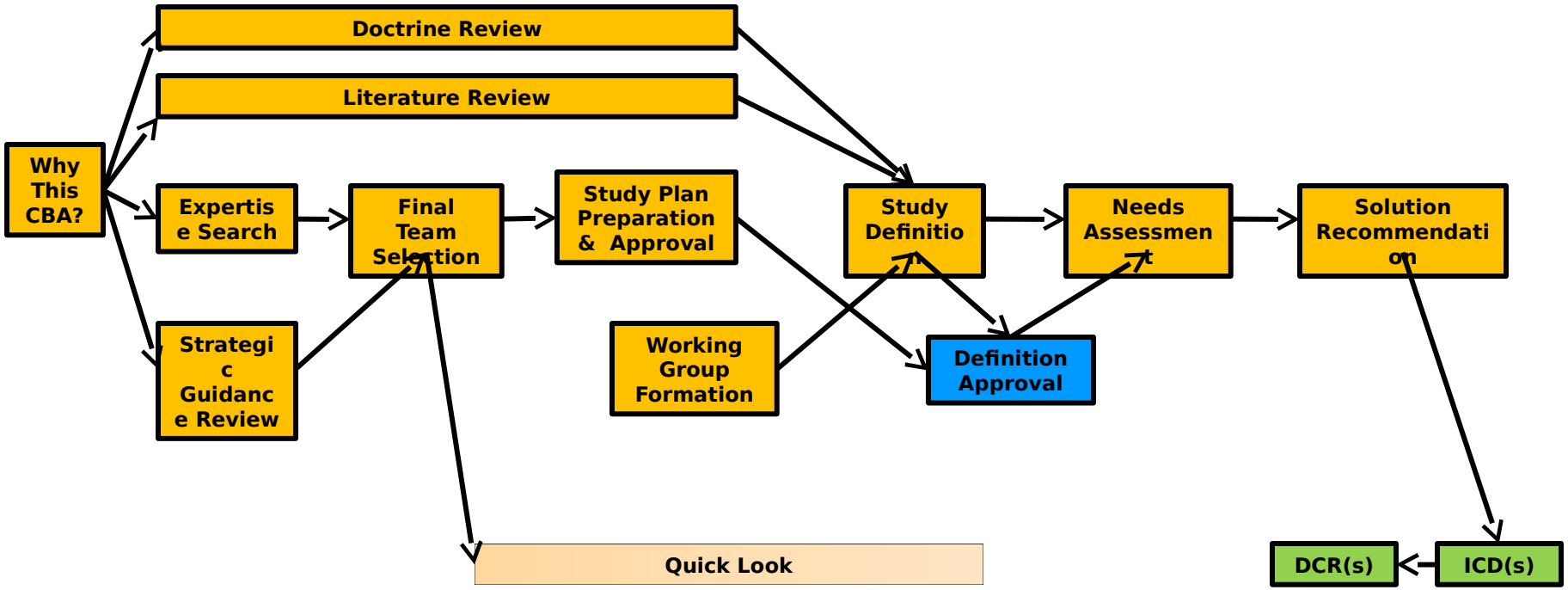


Study Definition Phase: Major Tasks & Flows

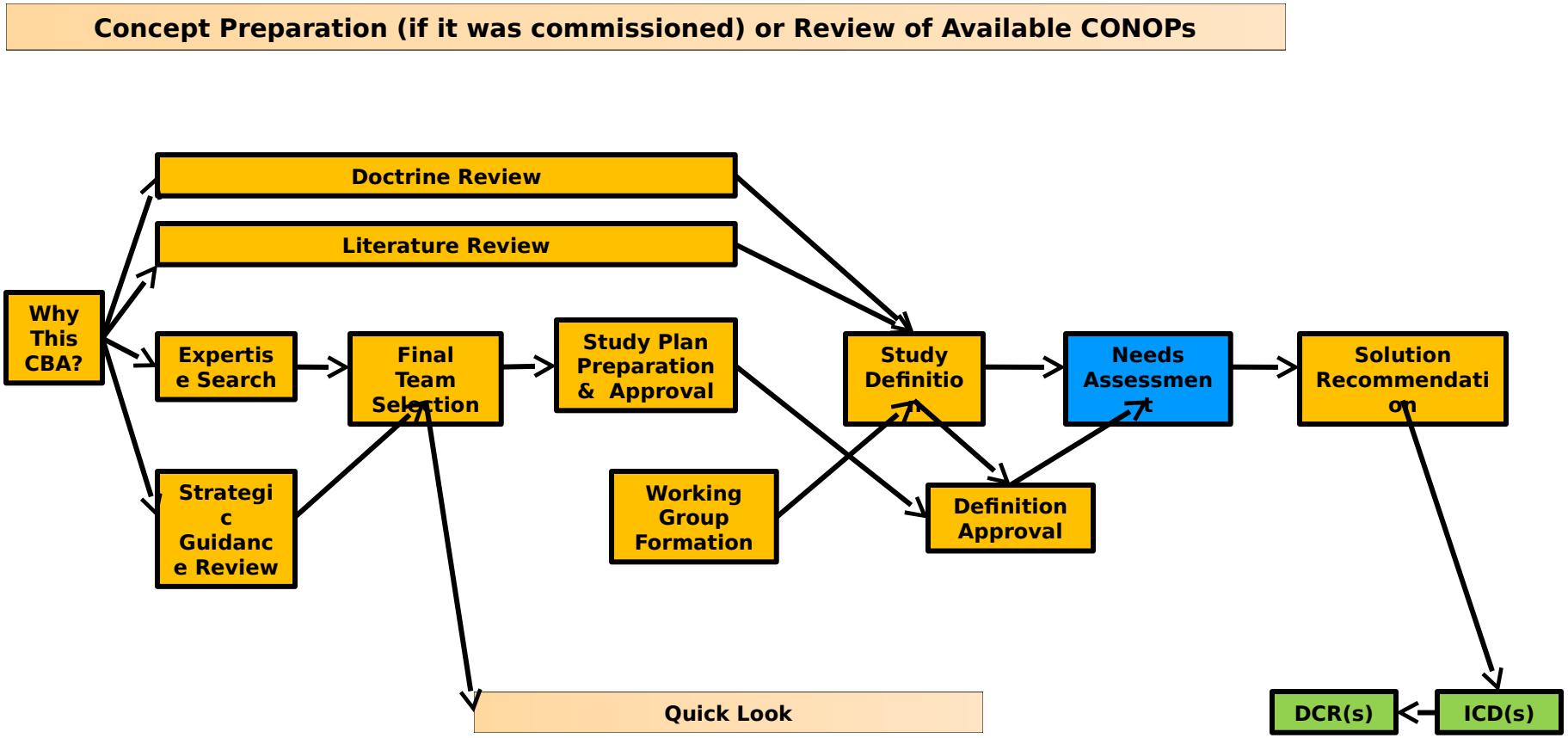


Definition Approval Phase

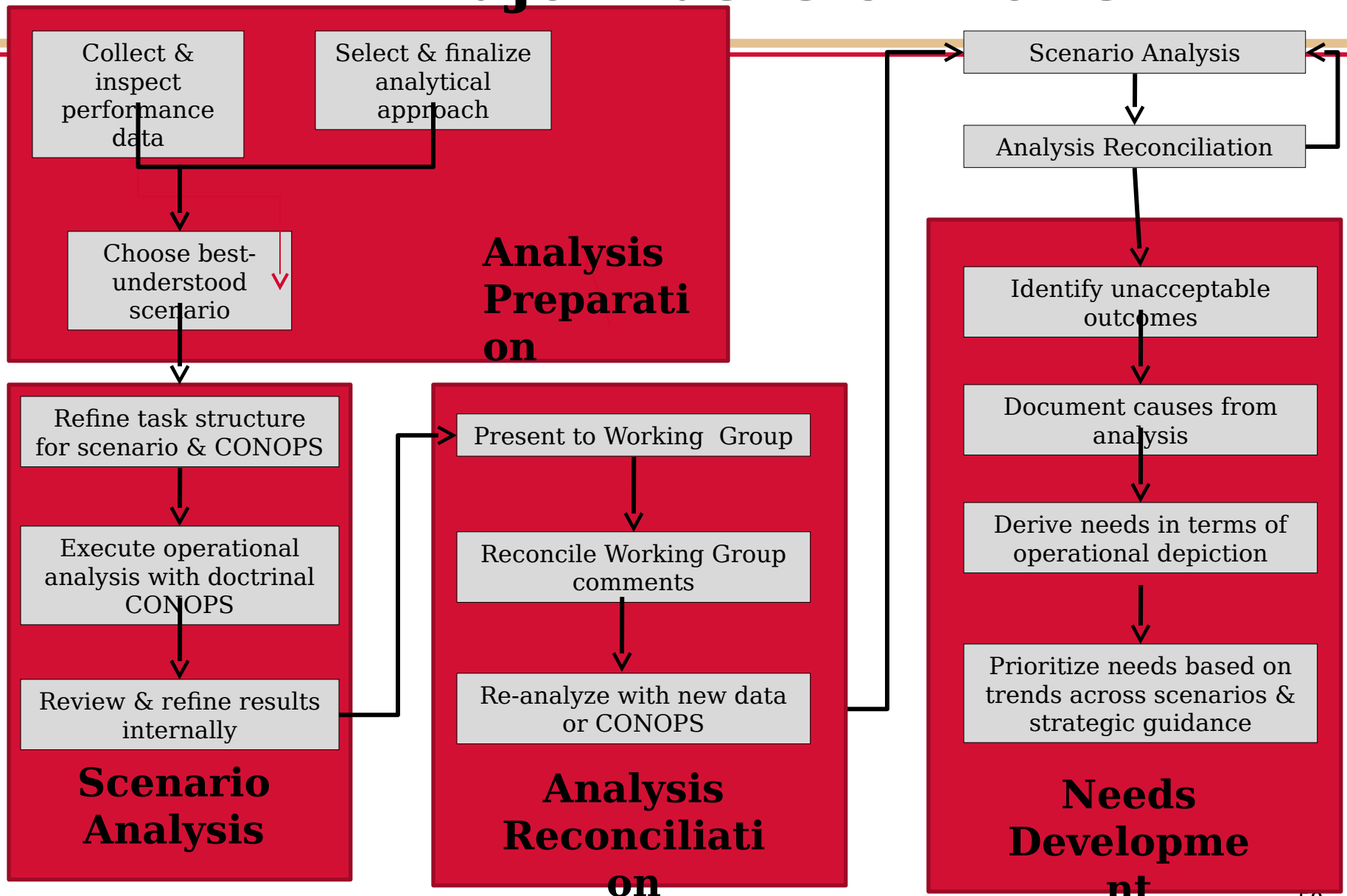
Concept Preparation (if it was commissioned) or Review of Available CONOPs



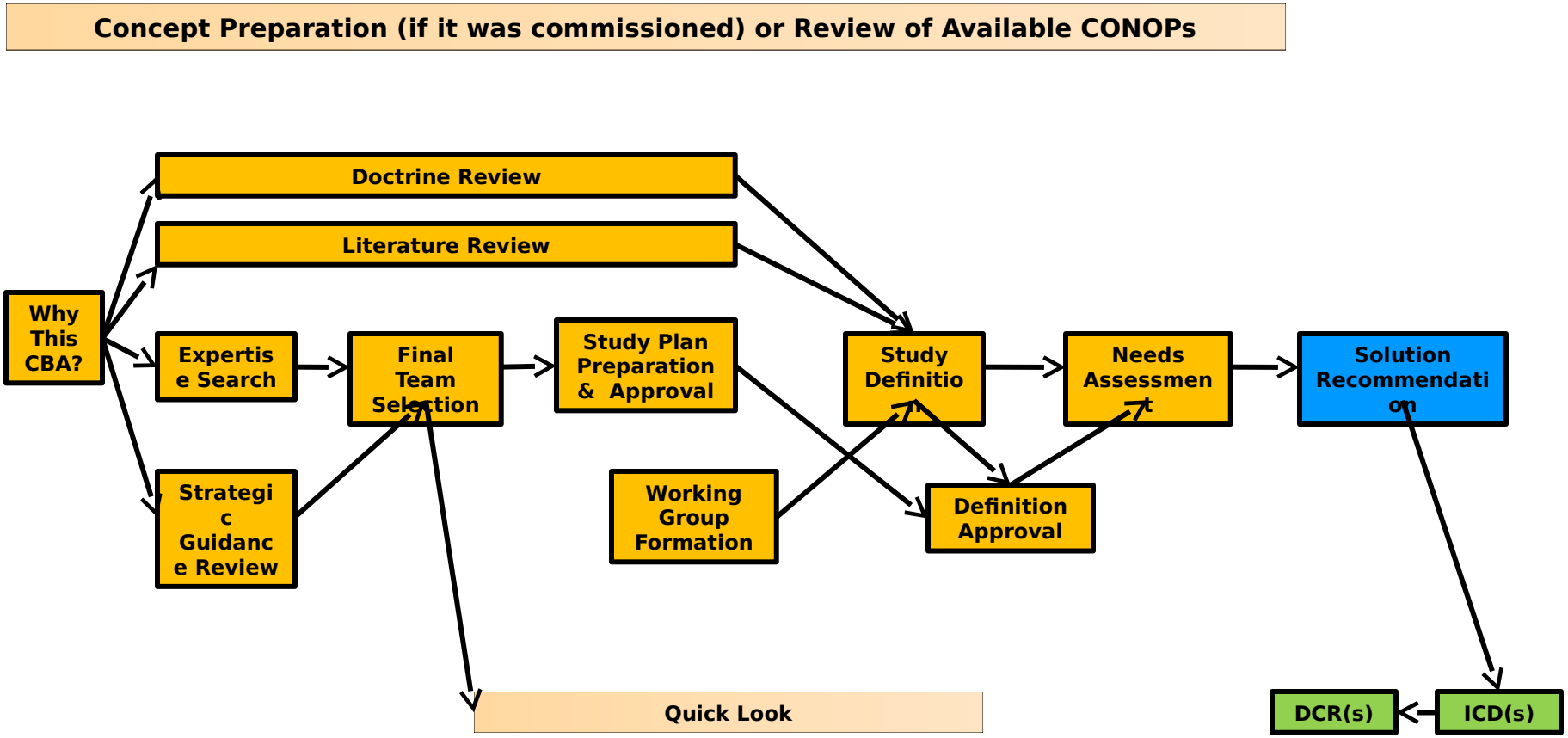
Needs Assessment Phase



Needs Assessment Phase: Major Tasks & Flows


Collect & inspect performance data
Select & finalize analytical approach
Choose best-understood scenario
Analysis Preparation
Refine task structure for scenario & CONOPS
Execute operational analysis with doctrinal CONOPS
Review & refine results internally
Scenario Analysis
Present to Working Group
Reconcile Working Group comments
Re-analyze with new data or CONOPS
Analysis Reconciliation
Scenario Analysis
Analysis Reconciliation
Identify unacceptable outcomes
Document causes from analysis
Derive needs in terms of operational depiction
Prioritize needs based on trends across scenarios & strategic guidance
Needs Development

Solution Recommendation Phase



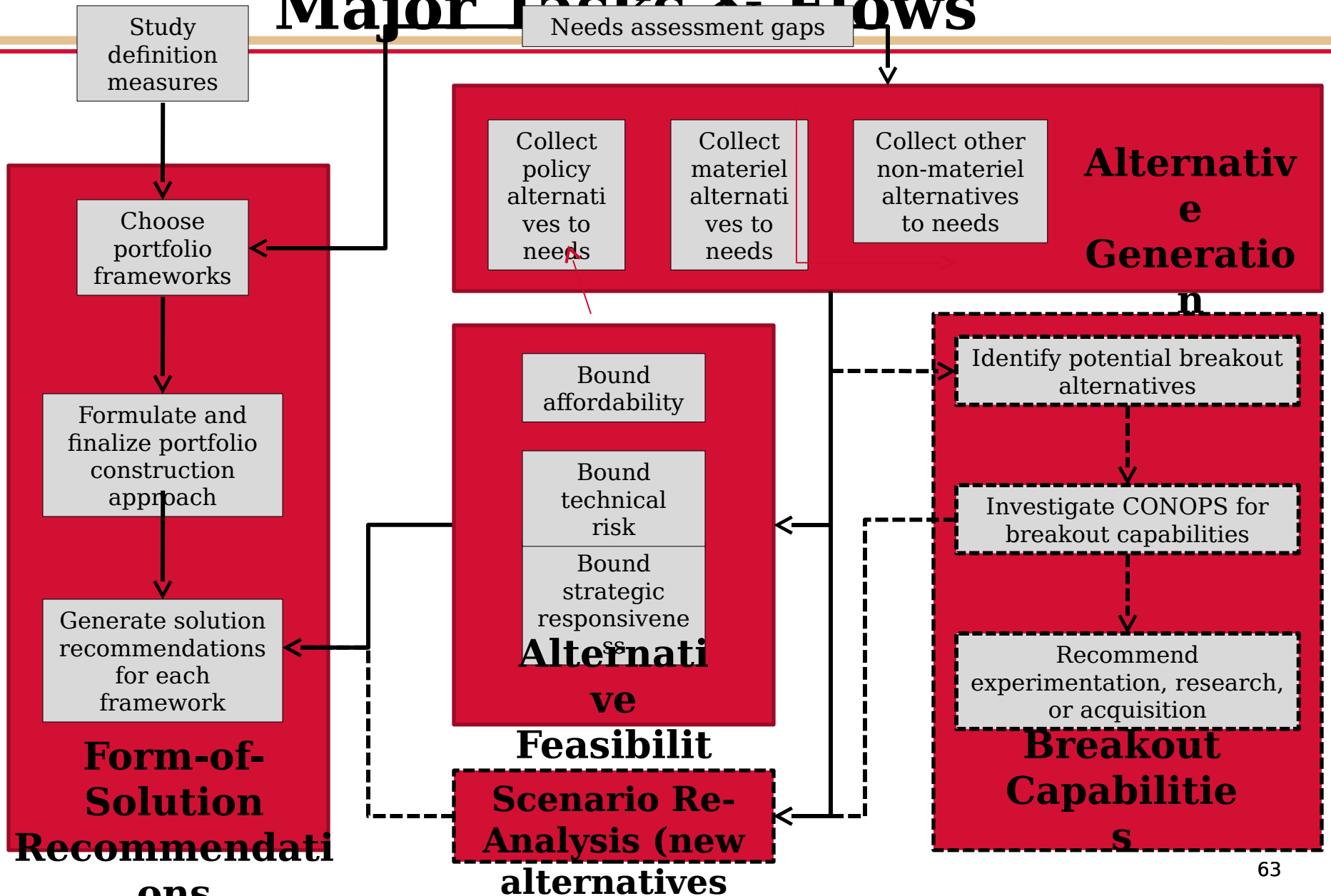
Non-Materiel Approaches That CBAs Recommend (through the ICD - DOTMLPF Change Recommendations - DCRs)

- Doctrine
- Organization
- Training
- Materiel
- Leadership & Education
- Personnel
- Facilities

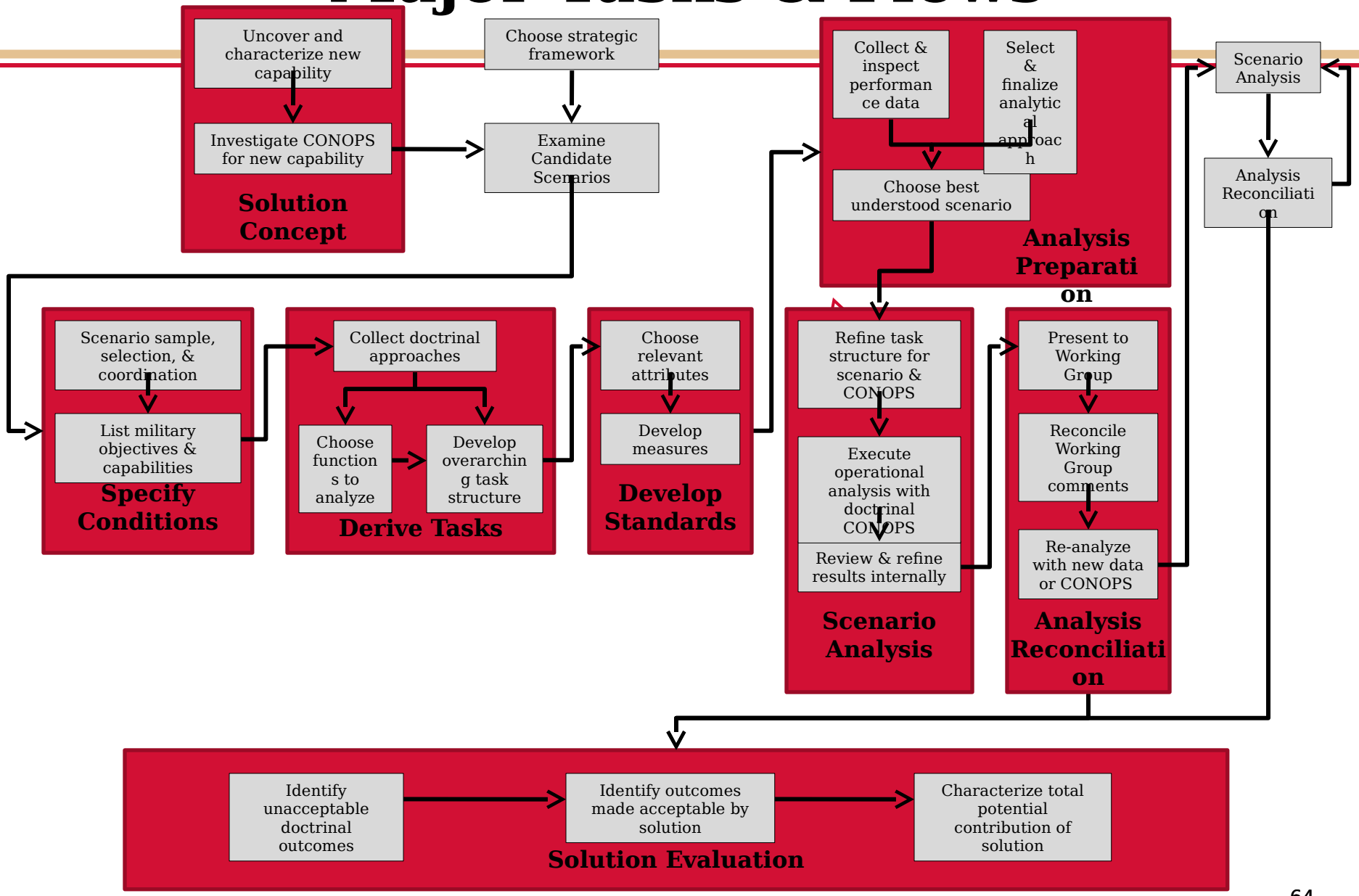
Materiel Approaches That CBAs Recommend (through Initial Capability Documents - ICDs)

- **Development and fielding of Information Systems**
  - **(or similar technologies with high obsolescence rates) or evolution of the capabilities of existing information systems**
- **Evolution of Existing Systems**
  - **with significant capability improvement (this may include replacing an existing system with a newer more capable system, or simple recapitalization)**
- **Breakout Systems**
  - **that differ significantly in form, function, operation, and capabilities from existing systems.**

Solution Recommendation Phase: Major Tasks & Flows



Opportunity-Based CBA: Major Tasks & Flows



Reflective Questions

- **You've worked hard on setting up your CBA on addressing gaps on insurgent detection in a crowded urban environment. You've accomplished your Definition Phase and miraculously, had it approved on the first round of staffing. You've also developed your portfolio framework in preparation to recommend solutions that will be used in both a DCR and an ICD (you figured this from your Quick Look pilot study way back in the beginning…). Now what steps are you going to take to develop and assess all available alternatives? What areas are you going to zero in on? Who will you consult – industry, labs? How would you find out if there are any breakout solutions? How would you find out what technologies related to your CBA identified gaps are under current investigation by the S&T communities in both government and industry?**